LISTING OF THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously presented) A method of protecting a circuit having power switching devices, the method comprising:

defining characteristics of a zone of protection of the circuit;

defining a protection matrix based at least in part upon said characteristics;

performing a zone protective function on said zone of protection using said protection matrix, wherein said protection matrix comprises a matrix of protection coefficients used by said zone protective function, wherein the step of performing said zone protective function is based at least in part upon electrical parameters of said zone of protection, said electrical parameters being communicated over a data network to a microprocessor, said microprocessor performing said zone protective function; and

controlling said microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on said electrical parameters.

2. (Original) The method of claim 1, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said protection matrix.

3. (Cancelled).

4. (Previously presented) The method of claim 1, further comprising sensing said electrical parameters with a sensor, communicating signals representative of said electrical parameters to a module, and communicating said signals to said microprocessor, wherein said module, said sensor and said microprocessor are communicatively coupled over said data network.

5. (Original) The method of claim 1, further comprising:

monitoring a topology of the circuit, said topology being based at least in part upon a status for each of the power switching devices in the circuit, said status being either opened or closed;

defining said zone of protection based at least in part upon said topology; and

adjusting said zone of protection based at least in part upon changes to said topology.

6. (Original) The method of claim 1, wherein the step of defining said characteristics comprises defining a plurality of combinations of states of the power switching devices in said zone of protection, each of said states being either opened or closed.

7. (Original) The method of claim 6, wherein the step of defining said characteristics further comprises defining power flow configurations for said zone of protection based upon said plurality of combinations of said states of the power switching devices in said zone of protection.

8. (Original) The method of claim 7, further comprising:

defining a definition matrix based at least in part upon said power flow configurations; and

defining said protection matrix based at least in part upon said definition matrix.

9. (Original) The method of claim 6, further comprising:

defining a zone state matrix based upon said plurality of combinations of said states of the power switching devices in said zone of protection; and

defining said protection matrix based at least in part upon said zone state matrix.

10. (Original) The method of claim 6, further comprising opening at least one of the power switching devices in said zone of protection based upon said zone protective function.

11. (Original) The method of claim 10, wherein a microprocessor is configured to operate each of the power switching devices in the circuit.

12. (Previously presented) A method of protecting a circuit having power switching devices, the method comprising:

defining characteristics of a zone of protection of the circuit;

defining a protection matrix based at least in part upon said characteristics;

performing a zone protective function on said zone of protection using said protection matrix;

determining a dynamic delay time for opening said at least one of the power switching devices;

opening said at least one of the power switching devices after said dynamic delay time has elapsed, wherein the step of performing said zone protective function is based at least in part upon electrical parameters of said zone of protection, said electrical parameters being communicated over a data network to a microprocessor, said microprocessor performing said zone protective function; and

controlling said microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on said electrical parameters.

13. (Previously presented) A method of protecting a circuit having power switching devices, the method comprising:

defining a plurality of combinations of states of the power switching devices disposed in a zone of protection of the circuit, each of said states being either opened or closed;

defining characteristics of said zone of protection based at least in part upon said plurality of combinations of said states of the power switching devices disposed in said zone of protection, said characteristics being actual and possible characteristics;

performing a zone protective function on said zone of protection based at least in part upon said characteristics;

determining a dynamic delay time for opening said at least one of the power switching devices;

opening said at least one of the power switching devices after said dynamic delay time has elapsed, wherein the step of performing said zone protective function is based at least in part upon electrical parameters of said zone of protection, said electrical parameters being communicated over a data network to a microprocessor, said microprocessor performing said zone protective function; and

controlling said microprocessor to perform instantaneous overcurrent protection of the switching devices based at least in part on said electrical parameters.

14. (Original) The method of claim 13, wherein said zone of protection is dynamic.

15. (Original) The method of claim 13, wherein the step of defining said characteristics comprises defining power flow configurations for said zone of protection based upon said plurality of combinations of said states of the power switching devices disposed in said zone of protection.

16. (Original) The method of claim 13, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said characteristics of said zone of protection.

17. (Cancelled).

18. (Previously presented) The method of claim 13, further comprising sensing said electrical parameters with a sensor, communicating signals representative of said electrical parameters to a module, and communicating said signals to said microprocessor, wherein said module, said sensor and said microprocessor are communicatively coupled over said data network.

19. (Original) The method of claim 13, further comprising:

monitoring a topology of the circuit, said topology being based at least in part upon a status for each of the power switching devices in said circuit, said status being either opened or closed;

defining said zone of protection based at least in part upon said topology; and

adjusting said zone of protection based at least in part upon changes to said topology.

20. (Original) The method of claim 13, further comprising opening at least one of the power switching devices in said zone of protection based at least in part upon said zone protective function.

21. (Original) The method of claim 20, wherein a microprocessor is configured to operate each of the power switching devices in said circuit.

22-31. (Cancelled).

32. (Previously presented) A protection system for coupling to a circuit having power switching devices and a zone of protection, the system comprising:

a control processing unit being communicatively coupleable to the power switching devices so that said control processing unit can perform all primary power distribution functions for the circuit and so that said control processing unit can perform a zone protective function on said zone of protection based at least in part upon characteristics of said zone of protection, said characteristics being actual and possible characteristics,

wherein said control processing unit utilizes a protection matrix to perform said zone protective function, said protection matrix being defined at least in part by said characteristics of said zone of protection, and

wherein said protection matrix comprises a matrix of protection coefficients used by said zone protective function, further comprising a data network in communication with said control processing unit and communicatively coupleable to the power switching devices.

33. (Original) The system of claim 32, wherein said characteristics are defined at least in part by a plurality of configurations for said zone of protection, said plurality of configurations being based at least in part upon states of the power switching devices disposed in said zone of protection, each of said states being either opened or closed.

34. (Original) The system of claim 33, wherein said characteristics are based at least in part upon power flow paths for said zone of protection, said power flow paths being based upon said states of said power switching devices disposed in said zone of protection.

35. (Original) The system of claim 32, wherein said control processing unit defines said zone of protection.

36. (Original) The system of claim 35, wherein said zone of protection is dynamic.

37. (Original) The system of claim 32, wherein said control processing unit monitors a topology of the circuit, said topology being based at least in part upon a status for each of the power switching devices in the circuit, said status being either opened or closed, wherein said control processing unit defines said zone of protection based at least in part upon said topology, and wherein said control processing unit adjusts said zone of protection based at least in part upon changes to said topology.

38. (Original) The system of claim 32, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said characteristics of said zone of protection.

39. (Cancelled).

40. (Previously presented) The system of claim 32, wherein said control processing unit operatively controls the power switching devices.

41. (Previously presented) The system of claim 32, wherein said control processing unit receives parameter signals representative of electrical parameters of the circuit, and wherein said control processing unit opens the power switching devices if a fault is detected in the circuit.

42. (Original) The system of claim 41, further comprising a module and a sensor, said module being in communication with the power switching devices, said sensor and said control processing unit, wherein said sensor senses said electrical parameters and communicates said parameter signals to said module, and wherein said module communicates said parameter signals to said control processing unit.

43. (Original) The system of claim 32, wherein said control processing unit opens at least one of the power switching devices in said zone of protection based at least in part upon said zone protective function.

44. (Original) The system of claim 32, wherein said control processing unit determines a dynamic delay time for opening at least one of the power switching devices, and wherein said at least one of the power switching devices is opened after said dynamic delay time has elapsed.

45. (Cancelled).

46. (Previously presented) A power distribution system comprising:

a circuit having power switching devices and a zone of protection; and

a control processing unit communicatively coupled to said power switching devices, wherein said control processing unit performs all primary power distribution functions for the circuit power distribution system and performs a zone protective function on said zone of protection based at least in part upon characteristics of said zone of protection, said characteristics being actual and possible characteristics,

wherein said control processing unit determines a dynamic delay time for opening at least one of said power switching devices, and wherein said at least one of said power switching devices is opened after said dynamic delay time has elapsed, further comprising a data network in communication with said control processing unit and said power switching devices.

47. (Original) The system of claim 46, wherein said characteristics are defined at least in part by a plurality of configurations for said zone of protection, said plurality of configurations being based at least in part upon states of said power switching devices disposed in said zone of protection, each of said states being either opened or closed.

48. (Original) The system of claim 46, wherein said characteristics are based at least in part upon power flow paths for said zone of protection, said power flow paths being based upon said states of said power switching devices disposed in said zone of protection.

49. (Original) The system of claim 46, wherein said control processing unit defines said zone of protection.

50. (Original) The system of claim 49, wherein said zone of protection is dynamic.

51. (Original) The system of claim 46, wherein said control processing unit monitors a topology of said circuit, said topology being based at least in part upon a status for each of said power switching devices in said circuit, said status being either opened or closed, wherein said control processing unit defines said zone of protection based at least in part upon said topology, and wherein said control processing unit adjusts said zone of protection based at least in part upon changes to said topology.

52. (Original) The system of claim 46, wherein said zone protective function is a plurality of zone protective functions, each of said plurality of zone protective functions being performed on said zone of protection based at least in part upon said characteristics of said zone of protection.

53. (Original) The system of claim 46, wherein said control processing unit operatively controls said power switching devices.

54. (Cancelled).

55. (Previously presented) The system of claim 46, wherein said control processing unit receives parameter signals representative of electrical parameters of said circuit, and wherein said control processing unit opens said power switching devices if a fault is detected in said circuit.

56. (Original) The system of claim 55, further comprising a data sample and transmission module and a sensor, said module being in communication with said power switching devices, said sensor and said control processing unit, wherein said

sensor senses said electrical parameters and communicates said parameter signals to said module, and wherein said module communicates said parameter signals to said control processing unit.

57. (Original) The system of claim 46, wherein said control processing unit opens at least one of said power switching devices based upon said zone protective function.

58. (Cancelled).

59. (Original) The system of claim 46, wherein said control processing unit utilizes a protection matrix to perform said zone protective function, said protection matrix being defined at least in part by said characteristics of said zone of protection.